Highlights
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Washington SCIENCE TRENDS

ATLAS IN ORBIT: A Congressional staff report warns today that unannounced satellite firings -- such as the launching of the huge Atlas last week-- could accidentally touch off a devastating nuclear war. The study, by the legal staff of the House Space Committee also raises the question of possible damage on earth when such huge vehicles re-enter the atmosphere.

The staff report was completed a few hours before the Air Force successfully placed in orbit its 85 foot Atlas ICBM. Nevertheless, the Congressional findings were directly linked with the problems raised by such launchings.

"It is easy to conjecture," the report released today declares, "the risks which may arise from the launching of new spacecraft when no notice is given of that launching. The need for the international filing of flight plans by countries intending to launch spacecraft thus seems patent.

"Without them, the technically advanced nations could someday obliterate themselves -- not for any real cause, but purely through accident -- by throwing the automatic war switch in the mistaken belief that an attack is being made. Conversely, the lack of flight plans might mean inability to protect oneself if a real attack occurs."

RE-ENTRY: Placing so many thousands of pounds in orbit also raises the problem of re-entry damage. The staff report points out: "As spaceborne materials become bigger and tougher, more of them will survive re-entry. In spite of the fact that the chances of satellite or missile remnants landing in a populated area are relatively small, they are now considered large enough to pose a real legal problem..."

A large satellite, the Congressional staffers conclude, might conceivably wipe out the better part of a city block. There is no certainty as to the legal steps available to prove or enforce liability for such a catastrophe.

MILITARY SATELLITES: Atlas in orbit also raises the question of military satellites since it is the first U.S. "moon" not included in the tacit agreements of the International Geophysical Year. The report raises the problem of the rights of nations to protect their air space against military satellites including reconnaissance vehicles and satellites designed for such apparently "peaceful" purposes as weather surveillance and control.

(Copies Available -- See Checklist)

SPACE ADMINISTRATION NEWS

National Aeronautics and Space Administration, still in the throes of reorganization, has been busy announcing new plans, policies and personnel. Here's a handy summary of the latest developments:

Project Mercury: This is the new code name for the civilian man-in-space program, for which private industry is busy bidding for a major role. Administrator Keith Glennan says that "at the very earliest, success of this venture is several years away." He will call upon the nation's aero-medical laboratories and other installations "to determine, in advance insofar as possible, man's ability to cope with the physical, mental and psychological stresses of space travel."

Million-Pound Thrust Engine: NASA will spend more than $200 million for design and development of a rocket engine in the one to one and a half million pound thrust range. Rocketdyne Division of North American Aviation bested five other firms in the competition. The Government will furnish fuel and facilities and test stands to be constructed at Edwards Air Force Base, California. The engine will be of liquid, bi-propellant, single chamber design -- using liquid oxygen and hydrocarbon propellants. Other liquids can be used without major change. NASA will devote special attention to new methods of simplifying directional thrust control and of pressurizing propellant tanks. The engine is expected to be available in about four years.

Congressional Relations: NASA is beefing up its staff for the expected onslaught of Congressional difficulties in the coming year. New appointment is of James P. Gleason, former assistant to Sen. William F. Knowland, and before that, aide to Richard M. Nixon, now Vice President.

Inventions Board: Five members of the NASA headquarters staff have been named to an Inventions and Contributions board to evaluate scientific contributions to aeronautical and space technology. More than 250 such proposals have already been received. The board will recommend actions which would reward an inventor or contributor or waive the Government's title to inventions made in the performance of work under NASA contract. Such decisions apply to contributions by private citizens as well as NASA and other Government employees and NASA contractors.

> Members of the new Board: Robert E. Littell, Assistant to the Director of Aeronautical and Space Research, Chairman; Paul G. Dembling, Assistant General Counsel; Allen Crocker, Chief of Guidance and Control Programs; Elliott Mitchell, Chief of Rocket Booster Programs and C. Guy Ferguson, Office of Director of Personnel. James A. Hootman is full-time secretary of the Board.

Inventions will be considered whether or not they are patentable and whether or not they were conceived in the performance of work under NASA contract. The Board can recommend a monetary award and applicants for such awards are entitled to a hearing. But a recipient must waive any claim to receive compensation for the use of his contribution.

The Aircraft industry will be putting the pressure on Congress to amend the patent provisions of the law which established the new Space agency. Particularly distasteful to some manufacturers is the provision which gives the U.S. title to inventions made in the performance of work under NASA contracts. If this right is waived, the U.S. still retains a royalty-free license.

OCEANOGRAPHY: U.S. Navy officials are actively considering a plan to provide a submarine now in mothballs for use by civilian scientists interested in oceanographic research. The ship would be manned by civilians with experience in the submarine service and would provide an important addition to the relatively weak U.S. effort in this field.

Soviet Submarine equipped for extensive investigations of the sea will make its "first long scientific voyage" sometime this month. The Russian ship, according to reports reaching Washington, has three large portholes located in the bow and other portholes to accommodate photographic apparatus, motion picture cameras, and a television camera.

Largest U.S. surface ship for oceanography was placed in operation by the Navy last week. It will be operated by the Military Sea Transportation Service for the Hudson Laboratories of Columbia University under contract to the Office of Naval Research. The ship, a converted seaplane tender, will feature the largest and heaviest sea winch ever used by this country for oceanographic research. It is capable of handling up to 40,000 feet of wire rope and lowering and raising 20 tone of equipment.

SUBMARINE DETECTION: Navy emphasizes value of the new ship, USNS Gibbs, in antisubmarine work. One of the most important uses of the Gibbs will be the investigation of underwater sound propogation. Meanwhile, SCIENCE TRENDS learned that an "important breakthrough" in the field of submarine detection has been proposed by a secret anti-submarine warfare panel under the direction of Dr. James L. Killian, White House Science Advisor. The new technique will probably be developed by the Lincoln Laboratory in Massachusetts.

RADIATION THERAPY: Research at AEC's Argonne National Laboratory, Lemont, Ill., has led to a "dramatic" reduction in the death rate among mice exposed to radiation from gamma rays and fission neutrons. Treatment included daily streptomycin therapy, intravenous injection of bone marrow cells and injection of the amino acid, cysteine. In control experiments, 52 of 53 untreated irradiated mice died within 10 days following exposure. Only six of 80 treated mice died in the acute 39 day period.

TECHNICAL EXPORTS: U.S. Bureau of Foreign Commerce has eased export regulations for certain types of transistors and laboratory-type high vacuum pump stations. At the same time controls have been tightened for other types of transistors and these items: welding rods of special types of steel; cobalt, molybdenum and molybdenum alloy welding rods, wires and electrodes, including brazing rods; certain metal-working machines;equipment for chemical and pharmaceutical processing and manufacturing machines; silicon and germanium crystal growing and processing machinery and equipment and certain rifle parts.

REACTOR PROGRAMS: Joint Committee on Atomic Energy is now cool towards gas-cooled reactor plans filed by Philadelphia Electric Co. and 53 other utilities. Committee is angry over the abandonment of homogenous reactor project by Pennsylvania Power and Light and Westinghouse Electric. Neither project called for a prototype stage, which Committee experts believe is necessary for such advanced concepts. Leading Democrats on the Committee now express the opinion that such projects must be pursued by the Federal Government and cannot be left to private industry or utilities. If the Philadelphia project wins AEC approval it may run into a Congressional "veto."

THE CHECKLIST

( ) Research and Development, and its impact on the economy. The proceedings of a National conference in Washington May 20, 1958. 223 pages; $1.25. (Write Superintendent of Documents, Government Printing Office, Washington 25, D.C. for Publication NSF-58-36)

( ) Technical Abstracts, the Proceedings of a conference of American Scientific and Technical Abstracting Services held in Philadelphia Jan. 29-31. 27 pages. (Write J. Miles Conrad, Biological Abstracts, University of Pennsylvania, 3815 Walnut St., Philadelphia, Pa.)

( ) BOMARC, A fact sheet on the Air Force long-range, high altitude supersonic interceptor-missile. 3 pages. Free. (Write Office of Information Services, HQ, Air Research and Development Command, Andrews Air Force Base,Washington 25, D.C. for Fls. No. 188-58)

( ) Spectrometer, an improved grating spectrometer capable of extremely high resolution in the infrared has been designed and constructed. It can be used to study radiation from fuels and gases of interest to the Armed Services and to supply data required by research and industry on the size and structure of molecules. (Details from Office of Technical Information, National Bureau of Standards, Washington 25, D.C.)

( ) Cancer Chemotherapy, a fact sheet and statement on the Federal Government's program for the screening of more than 40,000 chemical compounds in the search for anti-cancer properties. 9 pages. Free. (Write Public Inquiries Branch, U.S. Public Health Service, Washington 25, D.C.)

( ) Barium Titanate Accelerometers, a summary of the proceedings of a national conference held in Washington in 1953 and now released for industry. The volume contains papers presented and discussions held on the properties of barium titanate; design factors and performance tests and instrumentation associated with accelerometers. 246 pages; $4. (Write OTS, U.S. Department of Commerce, Washington 25, D.C. for PB 151161)

( ) Rare Earths, a literature review on the properties of cerium and praseodymium oxides and comments on some characteristics in the rare earth series. A study for the U.S. Air Force. 66 pages. $10.80. (Write Photoduplication Service, Library of Congress, Washington 25, D.C. for PB 135200)

( ) Plasma Jet, a study by the Giannini Research Laboratory, Santa Ana, California on the principles and theories of plasmas, interrelationships to other physical and astrophysical phenomona, present and future applications. Study was written for U.S. Air Force. 31 pages. $1. (Write OTS, U.S. Department of Commerce, Washington 25, D.C. for PB 131647)

( ) Space Law, a plea by a Congressional Committee staff for action on international cooperation in outer space. Also surveys published literature. Free. (Write Committee on Space and Astronautics, New House Office Building, Washington 25, D.C.)

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